DOCUMENT RESUME

ED 325 258 PS 019 240

AUTHOR Pratt, Sherry J.; Moesner, Cheryl
TITLE A Comparative Study of Traditional and Cooperative Learning on Student Achievement.
PUB DATE Oct 90
NOTE 16p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Academic Achievement; Classroom Research; Comparative Analysis; *Conventional Instruction; *Cooperative Learning; Educational Practices; *Elementary School Students; Grade 5; Intermediate Grades; *Low Achievement

ABSTRACT

The purpose of this study was to determine whether cooperative learning would produce higher achievement test scores among low-ability fifth-graders than the traditional mode of instruction. Subjects were students in two low-ability classes, one taught by a teacher who used traditional instruction, and another taught by a teacher who used cooperative learning. Classes were given the California Achievement Test. Total reading, language, mathematics, and battery scores indicated that students in the cooperative learning class scored higher than students in the traditional class. There were statistically significant differences in favor of the cooperative learning class on mathematics and total battery scores. (RH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☒ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

ED325258

A COMPARATIVE STUDY OF TRADITIONAL AND COOPERATIVE LEARNING ON STUDENT ACHIEVEMENT

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

David A. Gilman

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Sherry J. Pratt and Cheryl Moesner

INDIANA STATE UNIVERSITY

PS 019240

ABSTRACT

The purpose of this study was to determine if cooperative learning would produce higher achievement test scores than the traditional mode of instruction. The subjects of this study were two low ability fifth-grade classes from Chrisney Elementary in which one class was taught by a competent teacher who implemented traditional instruction while the other class was taught by an equally competent teacher who implemented cooperative learning . Both of these classes were given the California Achievement Test (CAT), and the test scores indicated that students in the cooperative learning class scored higher overall than the students in the traditional class.

Since the end of World War II, the schools in America have been criticized for low student achievement. Many have felt that lack of discipline, school dropouts, and the increased use of drugs were to blame for the schools' problems. It was observed by Glasser (1986) that discipline, dropouts, and drugs were only symptoms of a more larger problem which was that many capable students sat in classrooms every day and made little or no effort to learn.

Many critics of public education have claimed that "Johnny can't read." As a result, there has been a push for a return to "the basics." In recent years, many schools have tried but without uniform success. Students are reading more but understanding less (Hechinger, 1988).

According to a report based on the results of the 1986 National Assessment of Educational Progress cited by Hechinger (1988), many school programs stress phonetic skills rather than higher level comprehension and critical thinking.

Traditional classroom teachers who have had large numbers of unmotivated students in their classes have discovered that regardless of how hard they have tried, they have been fortunate if they have maintained a semblance of order. Many have criticized the traditional mode of instruction as having contributed to the lack of motivation in capable students. In the traditional structured classroom, the teacher has been the educational leader and controlled all learning in the classroom. In the traditional classroom. each student each student has learned independently of his classmates and has had little motivation to work with or help his fellow students. It was similarly observed by Slavin (1978) that there has been little student interaction evident in the traditional classroom. It was further noted by Slavin that students in the traditional classroom have not been allowed to help each other as helping other has been viewed as a form of cheating.

It was also discovered by Slavin in 1978 that in another study conducted by Kirschenbaum and his associates in 1971, it was found that in most traditional classrooms, the reward structure has been competitive as most students have been graded on the comparative standard. In the traditional competitive grading system, success has been obtained by only a few students in a classroom. Success has been virtually unattainable by many students who have been unable to earn A's or B 's no matter how hard they have tried. Many students who have consistently done poorly in the competitive system have experienced deep and lasting losses of self-esteem and have lost their desire to learn.

One of the major issues noted is that students are not given enough opportunities to engage in instructional activities which aid their comprehension and higher level thinking skills. Teacher often help poor readers to simply get through the text rather than encouraging them to comprehend what they read.

It was further observed by Glasser (1986) that some of these unmotivated students have discovered that if they have not disrupted the class, they would probably be advanced to the next grade level at the end of the school year. These students have also discovered that if they sat long enough, they could even "earn" some kind of diploma.

Many educators are afraid that the push for improved reading scores may be part of the problem. On reading tests, children are asked to answer multiple-choice questions or fill in missing words. If primed to do this, students can increase their reading scores, but according to the 1986 National Association of Educational Progress, there has been little done to aid students' understanding of what they read.

Since comprehension is a major goal in reading instruction, why does this problem exist? The answer may lie in providing educators with effective teaching methods.

The dilemma of deciding the most effective means of facilitating reading comprehension has long been debated by educators. Different approaches have been tried and many studies have compared the effectiveness of various strategies. Although there has not been agreement on the best method, the traditional approach is the most predominantly used strategy in the classroom (Wood, 1987).

Critics of the traditional method of reading complain that basal readers, standard books, and drill worksheets that prepare students for standardized tests make reading dull and not intellectually challenging. Decoding words bears little relationship to real reading and enjoyment (Hechinger, 1988).

An approach that is often used as a supplement to traditional instruction but that is beginning to stand on its own is cooperative learning.

In response to the criticisms of the traditional mode of instruction, it was concluded by Sharan, Ackerman, and Hertz-Lazarowitz (1980) that educators and psychologists sought alternatives to the traditional one group classroom. Many teachers have expressed frustration with the competitive traditional approach to learning as it has been particularly unsuccessful with low-achieving students. Some educators have suggested that since competition has not been successful then cooperative learning should be considered as an alternate method of instruction.

What is cooperative learning? It is a repertoire of teaching methods in which pupils work in small, mixed-ability learning teams to accomplish a common academic goal (Slavin, Stevens, & Madden, 1988). Many times, rewards are based on the learning of the team members as a group, so it is important that the students within each team learn the material and help their teammates learn, also. Cooperative learning has been defined by Slavin and Karweit (1981) as "the instructional strategies in which students work in small cooperative groups or teams to master academic materials and are rewarded for doing well as a group."

According to Johnson and Johnson (1974), it was found that research on cooperative learning began in the early 1900's. In a further study conducted by Slavin (1981), it was discovered that research on practical classroom applications of cooperative principles began in the 1970's. There has been an increased interest in cooperative learning during the past decade due to the previously mentioned criticisms of the traditional mode of instruction.

Since 1980, research on cooperative learning conducted at John Hopkins University has focused on cooperative learning methods designed to replace traditional instruction entirely in particular subjects and at particular levels (Slavin, 1987). This instructional strategy has been widely researched and advocated throughout professional literature. In fact, there is more confirmation for the advantages of cooperative learning than for many other aspects of education (Brandt, 1987).

Many studies based on the effectiveness of cooperative learning have found positive effects in subjects such as mathematics, language arts, social studies, and science, but until recently, there was a lack of research on the effects of cooperative methods on reading comprehension. (Stevens, Madden, Slavin, & Farnish, 1987).

In a study recently conducted by O'Donnell, Dansereau, Rocklin, Hythecker, Young, Hall, Skaggs, and Lambiotte (1988), the effectiveness of three slightly different cooperative learning strategies in promoting functional literacy of one hundred and twenty-three college students was investigated. Functional literacy is defined here as the kind of literacy that requires reading as a group of instructions and performing the steps successfully. If was found that all three cooperative learning groups out performed the control group. It was also reported that all three cooperative learning strategies positively affected the comprehension of sets of instructions and ultimately, the completion of them . Lastly, it was suggested that the reason why there were not many strong differences between the three cooperative learning groups may have

been due to the overall effectiveness of cooperative dyads on academic performance when compared to the effects of individuals.

It has been concluded by Slavin (1978) that teachers who have used the cooperative learning approach have presented curriculum material to their classes by implementing whole group instruction. They have required that their students complete their homework by working in assigned learning,groups or teams. It has been observed by Slavin (1980) that learning teams have consisted of groups of four to six students who have worked together and have been rewarded according to their group's performance. It was further noted by Slavin in his research in 1978 that teachers in cooperative classrooms have monitored each group's progress in addition to presenting new material to the class. They have determined student accountability through the use of frequent quizzes and game style tournament competitions between groups.

From their observations of teachers and students working together in cooperative classrooms, Slavin (1981) and Glasser (1986) have concluded that there were several advantages to incorporating learning teams in the classroom: Slavin noted that the following characteristics have been attributed to the implementation of cooperative learning:

1. The cooperation required among students prevented one student from doing most of the work for others.
2. Regardless of the cooperative nature of the groups, each students had to learn the material in order to improve his individual score and the team score.
3. Low achievers received recognition since scores were based on individual improvement, however small, over past performance
4. Students were motivated to cooperate since they received public recognition from the teacher and the class in addition to letter grades.

It was found by Glasser that students in cooperative learning classrooms gained a sense of belonging as they worked in their groups which were selected by the teacher and consisted of a range of low, middle, and high achievers. The sense of belonging provided the initial motivation for students to work, and as they achieved academic success, students who had not worked previously realized that knowledge was power and wanted to work harder.

McDonald, Larson, Dansereau, and Spurlin (1986) are also supporters of cooperative learning. They cite three experiments that were conducted using student dyads. This cooperative learning strategy requires both students within each pair to

read the same part of a particular passage. One student then summarizes orally from memory from what has been learned. The other student serves ask the listener who corrects errors in recall and aids the other student in organizing the material. The partners then switch roles. The results of these experiments concluded that pairs using the dyadic cooperative strategy outperformed students who implemented their own pair learning method and students who studied individually with no specific instruction. It was also suggested that active listening is more productive than passive listening.

Also in favor of cooperative learning are Stevens, Madden, Slavin, and Farnish (1987). Two studies conducted with students in grades three and four evaluated a cooperative learning strategy called Cooperative Integrated Reading and Composition. This form of cooperative learning involves a cycle of teacher instruction, team practice, individual assessment, and team recognition. It was concluded that this cooperative learning method had a significant effect on reading comprehension for the third and fourth graders in regular education as well as for special education students and remedial reading students.

In a study similar to those mentioned before, Slavin, Stevens, and Madden (1988) studied thirty third and fourth grade classes. They reported that when cooperative learning was added to direct instruction in reading comprehension, it significantly intensified the effect for main idea and to a lesser degree for inference skills.

According to Radebaugh and Kazemek (1989), reading comprehension demands active participation; that is, reading commands use of prior knowledge. The extent of prior knowledge in turn, determines how well readers formulate meaning from the written word. According to Flood cited in Uttero (1988), cooperative learning is very conducive in stimulating students' prior knowledge, because it requires them to actively participate in their learning with others. As a result, reading with other peers often makes comprehension easier (Radebaugh & Kazemek, 1989).

It was further observed by Glasser that high-achieving students found the use of learning teams fulfilling to their needs as they acquired power and friendship from helping their classmates. Low achievers also found fulfillment from the implementation of learning teams as they realized that their contribution helped their group to achieve success.

In the combined research of Stevens, Madden Slavin, and Farnish (1987), Slavin noted the results of his field experiments, completed in 1983, which further strengthened his support of cooperative learning. From more than 50 field

experiments of 4 to 30 weeks' duration, it was concluded by Slavin that when students worked together in four-member groups and were rewarded based on the learning of all group members, they achieved consistently more than students who were in traditionally taught classrooms. His studies involved such subjects as language mechanics, mathematics, science, and social studies at grade levels from third to college.

However, Laughlin's comparative study of cooperative learning and traditional instruction, performed in 1978, has provided conflicting results which have not verified Slavin's findings. Laughlin administered Part I, Synonyms and Antonyms of the Terman Concept Mastery Test to 528 college students from a wide range of psychology and philosophy courses. The students were trichotomized into high (H), medium (M), and low (L) thirds and then assigned to one of the ten possible three-person groups which were as follows: (HHH, HHM, HHL, HMM, HML, HLL, MMM, MML, MLL, LLL) or three individual control conditions (H, M, L).

It was found that high-ability students clearly benefited from working in a cooperative group with comparable high-ability partners. However, medium-ability and low-ability students did not benefit from working in cooperative groups with comparable partners. The results indicated the importance of the ability composition of the group members in cooperative group problem solving. It was concluded that as the ability level of the group increased, the groups performed progressively better than the same group members would have performed alone.

Due to the conflicting theories concerning the effectiveness of cooperative learning on student achievement, Johnson, Maruyama, Nelson, and Skon (1981) performed a meta-analysis which Glass (1977) defined as "the combining of results of independent experiments for the purpose of integrating their findings." Johnson and his colleagues reviewed every study that was available to them and examined the effects of 21 independent variable on cooperation versus individualistic effort. It was discovered by the voting method that cooperation promoted higher achievement than individualistic efforts by 108 to 6 (with 42 no differences). The effect size of .78 favoring cooperation indicated that the average person in the cooperative condition performed about .75 SD above the average person who worked individualistically or at the 78th percentile of the individualistic condition. The z score of 24.01 favoring cooperation indicated that the probability that the difference was due to chance was .00001. In conclusion, Johnson et.al. recommended that educators increase the use of cooperative learning procedures to promote higher student achievement. Due to Johnson et. al.'s recommendations, it would be assured that if students were taught by

the cooperative method of instruction, then their means or levels of achievement should be greater than the means of students taught bu the traditional mode of instruction.

Although there have not been enough research studies conducted on the effects of cooperative learning on reading comprehension, cooperative learning is still a viable method worth investigating.

If implementing cooperative learning increases reading comprehension scores, then students taught with cooperative learning should have higher reading comprehension scores than students taught with a traditional method.

Statement of the Problem

In comparing cooperative learning with traditional learning, the General Statement of the Problem would be: How can teachers vary their methods of instruction to increase student achievement? The Specific Statement of the Problem would be: Does cooperative learning promote higher achievement scores than does the traditional method of instruction? The Hypothesis would be: The cooperative method of instruction will promote higher achievement scores as measured on the CAT than the traditional method of instruction.

Methodology

The students involved in this study were from two low ability fifth-grade classes at Chrisney Elementary. Chrisney Elementary is located in Chrisney, Indiana and is one of the four rural elementary schools in the North Spencer School Corporation. The students at Chrisney Elementary were representative of students in the southern Indiana communities in that the school enrollment was small, approximately 300, and that most of the students originated from lower to middle income families. No differences were noted about the subjects as a group or as individuals.

The traditional fifth-grade class consisted of 19 students who were administered the California Achievement Test in 1989. The cooperative fifth-grade class consisted of 19 students who were administered the California Achievement Test in 1990. Both classes were taught by equally competent teachers, the only difference being the method of instruction implemented.

The students' mnce scores from the CAT that were examined consisted of total reading, total language, total mathematics, and total battery scores. The scores were analyzed by computer, and the Statistics With Finesse software package was used for all computations. The mean scores were compared by a one-tailed independent t-test. The t-test was used to determine of cooperative learning produced significant achievement gains at the .05 and .01 levels.

This study implemented the posttest-only, nonequivalent control group design.

Results

The results of this study are contained in Tables A and B. X represents the mean, and s represents standard deviation.

Table A

	Traditional		Cooperative	
Subtest	X	s	X	s
Reading	55.68	15.13	59.79	11.64
Language	59.79	14.29	63.16	11.60
Mathematics	64.74	15.76	77.21	14.09
Composite	59.95	14.15	67.32	10.40

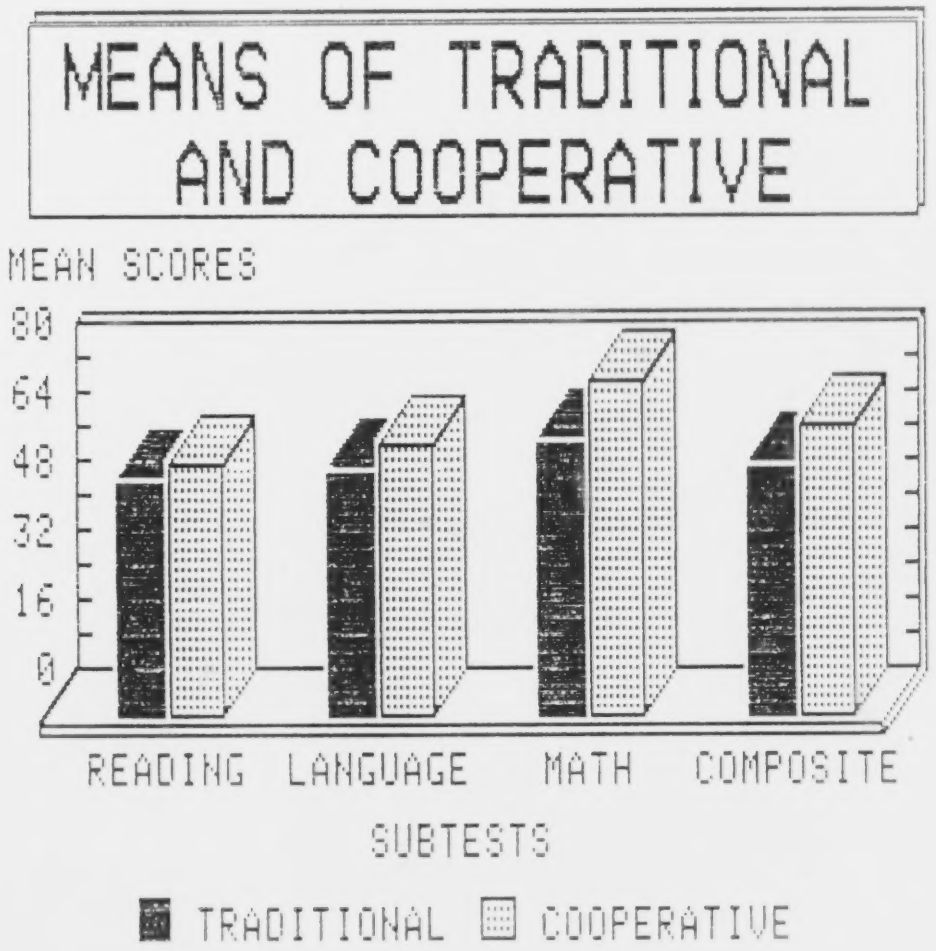
Table B

	Traditional	Cooperative
Subtest	t-value	Significance
Reading	0.94	0.18
Language	0.80	0.22
Mathematics	2.57	0.01
Composite	1.83	0.04

Table A presents the means and standard deviations of the traditional and cooperative classes in the areas of reading, language, mathematics, and total battery. Table B presents the t-value and one tailed probability, or indicator of significance, of the traditional and cooperative classes in the areas of reading, language, mathematics, and total battery.

According to the information presented in Table B, the directional null form of the hypothesis cannot be rejected for the areas of reading and language as cooperative learning did not indicate significant differences at the .05 level. However, the directional null form of the hypothesis must be rejected for mathematics and total battery, the composite subtest, as a significant difference was indicated in total battery at the .05 level.

The following bar graph is presented to indicate the comparisons of the mean reading, language, mathematics, and composite scores between the traditional (T) and the cooperative (C) methods.



Discussions, Conclusions, and Recommendations

Although the findings of this study show no positive gain in the reading comprehension scores of the class taught with cooperative learning, one study cannot provide a conclusive evaluation of the effectiveness or lack of effectiveness of cooperative learning on reading comprehension. As stated previously, there is a lack of research on the effects of cooperative learning on reading comprehension (Stevens, Madden, Slavin, & Farnish, 1987). Obviously, more studies need to be conducted to assess the benefits of cooperative learning in this particular subject area.

After analyzing the statistical results generated by the CAT scores, the following conclusions were made: Cooperative learning did not appear to be effective in increasing total reading and language scores. However, cooperative learning did appear to be effective in increasing mathematics and total battery scores. Reading and language would not appear to require the problem solving strategies that would be needed in mathematics which may explain the gains made in mathematics with cooperative learning. Cooperative learning enables students to interact and work toward a common goal which would be of more benefit in mathematics than in reading and language.

Nevertheless, many researchers are in favor of implementing cooperative learning in all subject areas and eliminating the traditional classroom approach to instruction. It would appear from this study that educators may want to consider implementing cooperative learning in subjects such as mathematics and science which require discussion and critical thinking techniques. Educators may want to continue the use of traditional learning in the other subject areas of reading, language, spelling, and social studies.

It is further recommended that additional research be completed on cooperative learning and that it include further in-depth studies of such factors as composition of group or learning teams members, educators' attitudes and training in cooperative learning techniques, and students' attitudes, responsibilities, and achievement gains in cooperative learning.

Even though cooperative learning is not the most popular or most researched method of facilitating reading comprehension, it is still a viable method worth investigating. Perhaps, completed studies in the future will shed new light on this issue.

REFERENCES

Brandt, Ron. (1987). On Cooperation in Schools: A Conversation with David and Roger Johnson. Educational Leadership, 45(3), 14-19.

Glasser, William. (1986). Control Theory in the Classroom. New York: Harper and Row.

Hechinger, Fred M. (1988, March). About Education. New York Times, p. 87.

Johnson, D. W.; and Johnson, R. T. (1974). Instructional Goal Structure: Cooperative, competitive, or individualistic. Review of Educational Research, 44, 213-240.

Johnson, D. W.; Maruyama, G.; Johnson, R. T.; Nelson, D.; and Skon, L. (1981). Effects of Cooperative Competition and Individualistic Goal Structures on Achievement: A meta-analysis. Psychological Bulletin, 89, 46-52.

Larson, Celia O., & Dansereau, Donald F. (1986). Cooperative Learning in Dyads. Journal of Reading, 29(6), 516-520.

Laughlin, Patrick R. (1978). Ability and Group Problem Solving. Journal of Research and Development in Education, 12(1), 39-48.

O'Donnell, Angela M.; Dansereau, Donald F.; Rocklin, Thomas; Hythecker, Velma I.; Young, Michael D.; Hall, Richard H.; Skaggs, Lisa P.; & Lambiotte, Judith G. (1988). Promoting Functional Literacy Through Cooperative Learning. Journal of Reading Behavior, 20(3), 339-356.

Radebaugh, Muriel Rogie, & Kazemek, Francis E. (1989). Cooperative Learning in College Reading and Study Skills Classes. Journal of Reading, 32(5), 414-418.

Sharan, S.; Ackerman, Z.; and Hertz-Lazarowitz, R. (1980). Academic Achievement of Elementary School Children in Small Group Versus Whole Class Instruction. Journal of Experimental Education, 48, 125-129.

Slavin, Robert E. (1978). Student Teams and Achievement Divisions. Journal of Research and Development in Education, 12(1), 39-48.

Slavin, Robert E. (1980). Effects of Student Teams and Peer Tutoring on Academic Achievement and Time On-Task. Journal of Experimental Education, 48, 252-257.

Slavin, Robert E. (1981, May). Synthesis of Reserch on Cooperative Learning. Educational Leadership, pp. 651-65.

Slavin, Robert E. (1987). Cooperative Learning and the Cooperative School. Educational Leadership, 45(3), 7-13.

Slavin, Robert E.; and Karweit, Nancy. (1981). Cognitive and Affective Outcomes of an Intensive Student Team Learning Experience. Journal of Experimental Education, 50, 29-35.

Slavin, Robert E.; Stevens, Robert J.; & Madden, Nancy M. (1988). Accommodating Student Diversity in Reading and Writing Instruction: A Cooperative Learning Approach. Remedial and Special Education, 9(1), 60-66.

Stevens, Robert J.; Madden, Nancy A.; Slavin, Robert E.; & Farnish, Anna Marie. (1987). Cooperative Integrated Reading and Composition: Two field experiments. Reading Research Quarterly, 22(4), 433-454.

Uttero, Debbra A. (1988). Activating Comprehension through Cooperative Learning. The Reading Teacher, 41(4), 390-395.

Wood, Karen D. (1987). Fostering Cooperative Learning in Middle and and Secondary Level Classrooms. Journal of Reading, 31(1), 10-18.